

TB TIMES

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Tuberculosis Contact Investigation - Revisited

"Contact investigations are to be active and imaginative, Sherlock Holmes pursuits." David Glasser, M.D. May, 1974.

Contact investigation is defined by the Centers for Disease Control and Prevention (CDC) as "a procedure for identifying people exposed to someone with infectious TB, evaluating them for latent TB infection (LTBI) and TB disease, and providing appropriate treatment for LTBI or TB disease". This activity is essential in the control and elimination of tuberculosis. "Data indicate that seven to eight cases of TB disease are found for every 1,000 contacts who are evaluated. The rate of having TB disease is 75 times higher among contacts than among the general population." The primary focus of contact investigation (CI) should be to find, evaluate and appropriately initiate prophylactic treatment and treatment for latent TB infection (LTBI), in a timely manner.

There are many steps to conducting contact investigations, these include:

1. Prioritizing the contact investigation
2. Identifying/finding the contacts
3. Evaluating the contacts
4. Providing prophylactic treatment and treatment for latent TB infection
5. Evaluating the CI activities

The index case who is assessed as high risk to transmit, based on AFB sputum smear positive, symptomatic (coughing) and/or cavitory chest radio-

graphs, should be given the highest priority for contact investigation. The interview techniques, use of open-ended questions and location of the interview, may greatly influence the outcome of the investigation. "If the health care worker does not communicate well enough with the patient, contacts who need evaluation and treatment may be missed. Nearly every TB patient has at least one contact; the number of contacts can range from one to several hundred."

Cases who are highly contagious and reluctant to initially provide contacts, should be re-interviewed to ensure contacts are identified. It is very unlikely a case who is 25 years old is without contacts or a 45 year old who is married and *only* names his wife and children. Questions should arise regarding living situation, source of income, employment, family and social activities.

The value of a home/field visit can not be emphasized enough. This provides an opportunity to assist in the risk assessment and to identify additional contacts. In addition, a home visit allows health workers to observe environmental factors that may impact treatment. When children's toys and pictures are seen in the household of a patient who identifies his wife as his only contact, this should prompt the health care worker to re-interview the patient.

"To use time and resources wisely,

UPCOMING CONFERENCES

- March 2, 2001 9:00 a.m. - 10:30 a.m.
Orthopaedic Hospital -
Andrew Norman Hall
"Tuberculosis - The Global Picture"
Vincent Hsu, M.D.
Associate Medical Director
- March 2, 2001 10:30 a.m. - 12:00 p.m.
Orthopaedic Hospital
Crowe Room
Physician Case Presentation
Vincent Hsu, M.D.
- March 13, 2001 9:00 a.m. - 12:00 p.m.
TB Control Program Headquarters
Room 506A
Mantoux Skin Testing Class
(Seating is limited/preregistration is required: please call (213)744-6229 for information)
- March 16, 2001 9:00 a.m. - 11:30 a.m.
TB Control Program Headquarters
Room 506A
Physician Case Presentation
Annette Nitta, M.D.
- March 21, 2001 8:00 a.m. - 12:00 p.m.
TB Control Program Headquarters
Room 506A
"TB 101 - Train The Trainer for Community Health Workers"
Robert Miodovski, M.P.H.
Senior Health Educator

Study Finds Moderate Success in Targeting Contacts of Infectious TB Patients

Contact investigation is intended to evaluate persons (contacts) who have been exposed to a newly discovered active case of TB for latent TB infection (LTBI), thereby targeting a group at high risk of developing active tuberculosis. This study was undertaken to describe outcomes of TB contact investigations, factors correlated with those outcomes, and current successes and ways to improve TB contact investigations.

Investigators abstracted clinic records of a representative U.S. urban sample of 1,080 pulmonary, sputum-smear positive TB patients reported to CDC July 1996 through June 1997 and the cohort of their 6,225 close contacts. They found a median of four close contacts per patient; fewer contacts were identified for homeless patients; and a visit to the patient's residence resulted in two additional (especially child) contacts identified. Eighty-eight percent of eligible

contacts received tuberculin skin tests (TSTs) and they found recording the last exposure date to the infectious patient facilitated follow-up TST provision. Thirty-six percent of contacts were TST positive; household contacts and contacts to highly smear positive or cavitary TB patients were most likely to be TST positive. Seventy-four percent of TST positive contacts started treatment for latent TB infection (LTBI), of whom 56% completed therapy. It was found that sites using public health nurses started more high-risk TST positive contacts on presumptive treatment for LTBI. Using directly observed treatment increased the likelihood of treatment completion.

The investigators documented outcomes of contact investigation efforts by urban TB programs and identified several successful practices, as well as suggestions for improvements, that will help TB programs target policies and

procedures to enhance contact investigation effectiveness.

In a related editorial, Dr. Philip Hopewell comments that this study suggests that these programs are only moderately successful in identifying, evaluating, and, when indicated, treating infected contacts. Many improvements are needed if contact investigation is to provide a major contribution to tuberculosis elimination in the United States and there must be increased emphasis on eliciting contacts in a more comprehensive way, completing the evaluation more rapidly, and being more effective in completing treatment of latent infection. Dr. Hopewell also calls for intensified research to identify a more accurate test for the diagnosis of LTBI and believes advances such as these will provide the means to move more rapidly toward the elimination of tuberculosis in the United States. *American Journal of Respiratory and Critical Care Medicine* 2000;162:2017-2018, 2033-2038

Evaluating Contact Investigation

Every six months, the TB Control Program analyzes contact investigation information and submits a report of these activities to the State TB Control Branch. This report, designed by the Centers for Disease Control & Prevention (CDC), is known as the Aggregate Report for Tuberculosis Program Evaluation (ARPE), Follow-up and Treatment for Contacts to Tuberculosis Treatment. ARPE is used by the State to assess the yield, efficiency and effectiveness of contact identification, evaluation and treatment activities and to measure how local jurisdictions are meeting CDC contact investigation objectives. The CDC contact investiga-

tion objectives are as follows:

- Contacts identified for $\geq 90\%$ of sputum AFB smear + cases;
- $\geq 95\%$ of these contacts are evaluated for TB infection and disease;
- $\geq 85\%$ of all infected contacts started on treatment complete treatment.

In Los Angeles County, this report analyzes information that the TB Control Program receives from the Public Health Centers via the Tuberculosis Screening Form (H-304) and the Tuberculosis Control Contact Investigation Report (H-289). A recent example of the Los Angeles County contact investigation ARPE is shown in Table 1 (*see pg. 3*).

This data is an important tool for measuring performance. Los Angeles County is doing a good job evaluating contacts, however, we still need to elicit contacts from a greater proportion of our pulmonary cases and increase completion of treatment among contacts that start therapy. In the future, TB Control intends to use this information to assist the Los Angeles County Service Planning Areas (SPA) in program evaluation and planning by identifying areas of competence and excellence in their contact investigation activities, as well as areas that require future attention. Updated ARPE data will be periodically published in future issues of the TB Times.

Continued on page 3

Continued from page 2

**Table 1. Aggregate Report for Tuberculosis
Program Evaluation
Follow-up and Treatment for Contacts to
Tuberculosis Cases
Reporting Area: Los Angeles County
Cohort: 01/01/2000-06/30/2000**

Part I. Cases and Contacts

Classification Contact Investigation Activities	Smear Positive	Smear (-) & Culture(+)	Other
Cases for Investigation	462	275	159
Cases with No Contacts	67	58	56
Contacts	4640	1116	460
Evaluated	4559	1099	446
TB Disease	17	3	2
Latent TB Infection	1733	318	162
Start Treatment	1071	163	87
Completed Treatment	507	59	47
*Death	0	0	0
*Contact Moved	102	12	5
*Active TB developed during TX	0	0	0
*Adverse Effect of Medicine	43	9	4
*Contact Chose to Stop	228	43	17
*Contact is Lost to Follow-up	20	1	4
*Provider Decision to stop TX	12	1	0

Part II. Index

Index	Smear Positive	Smear(-) & Culture(+)	Other
No-Contacts Rate	14.50%	21.09%	35.22%
Contacts Per Case	10.04	4.06	2.89
Evaluation Rate	98.25%	98.48%	96.96%
Disease Rate	0.37%	0.27%	0.45%
Latent Infection Rate	38.01%	28.94%	36.32%
Treatment Rate	61.80%	51.26%	53.70%
Completion Rate	47.34%	36.20%	54.02%

* Reason for treatment not completed

Selected Definitions - Part I. Cases and Contacts
Cases for Investigation.

The TB cases, their contacts, and all the subsequent results are grouped into three categorical columns according to the types of TB cases that led to contact investigations.

Sputum Smear +

Includes cases reported to the State with TB disease in the respiratory system and at least one positive AFB sputum-smear result.

Sputum Smear - Culture +

Includes cases reported to the State with TB disease in the respiratory system, no positive AFB sputum-smear results, and sputum culture results positive for *M. tuberculosis*.

Others

This category is for contacts to cases who have verified pulmonary TB that is neither sputum-smear-positive nor sputum-culture-positive, such as clinically-verified cases.

Cases with no Contacts

Cases that are counted under one of the first two columns (**Sputum smear +**, or **Sputum Smear - Culture +**, see above) are counted here if no contacts were elicited.

Number of Contacts

Persons who have been exposed to TB are included in this report as contacts when: 1) the health department believes an evaluation for TB disease or latent infection is warranted, 2) the exposure was caused by a TB case counted by the reporting jurisdiction - in this case Los Angeles County - and 3) enough identifying and locating information is available to contact the person.

Evaluated

Included in this category are all contacts for which a final determination can be made about two of the potential diagnostic outcomes: latent TB infection, or TB disease. In Los Angeles County, dispositions used to determine evaluation include: a negative TB skin test; or a positive TB skin test and an x-ray; or a recommendation to start treatment for latent TB infection; or a recommendation against starting treatment because the patient does not meet criteria, or the patient has a history or prior treatment for latent TB infection; or a diagnosis of TB disease or suspected TB disease.

Latent TB Infection

Included in this category are all contacts with a positive TB skin test.

Start Treatment

This category includes only those contacts counted under **Latent TB Infection** that started treatment for latent TB infection.

Completed Treatment

Of the contacts identified as **Started Treatment**, this is the number of contacts that complete treatment for latent TB infection.

Part II. Index

Evaluation Indices: The formulas used to calculate the evaluation indices are as follows:

No-contacts Rate: the number of **Cases with No Contacts** divided by the total number of **Cases for Investigation**.

Contacts Per Case: the **Number of Contacts** divided by the total number of **Cases for Investigation**.

Evaluation Rate: the number of contacts **Evaluated** divided by the **Number of Contacts**.

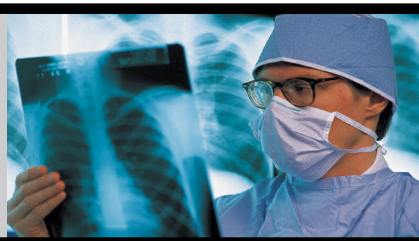
Disease Rate: the number of contacts diagnosed with **TB Disease** divided by the number of contacts **Evaluated**.

Latent Infection Rate: the number of contacts with **Latent TB Infection** divided by the number of contacts **Evaluated**.

Treatment Rate: the number of contacts that **Started Treatment** for latent TB infection divided by the number with **Latent TB Infection**.

Completion Rate: the number of contacts that **Completed Treatment** for latent TB infection divided by the number of contacts that **Started Treatment**.

The Clinical Corner



Latent TB Infection in Long Term Care Facilities for the Elderly

The Fall conference of the California Tuberculosis Controllers Association focused on Guidelines for Targeted Testing and Treatment of Latent TB Infection, following the CDC nomenclature change in pursuit of nationwide TB Elimination. The goal of TB elimination for Los Angeles County will require all of us to contribute strategies to reach the populations with latent TB infection most likely to develop disease. Latent TB infection in long term care facilities is a challenge waiting to be taken.

The experience from two separate cases give us an opportunity to view practices in vari-

ous levels of long term care facilities when airborne exposure occurs. In our first case, TB contact evaluation was initiated in a Skilled Nursing Facility (SNF) following the report of cavitary TB found in an employee of the SNF. This employee was a nursing attendant who worked throughout the SNF, potentially exposing all employees and residents. A second, unrelated infectious TB case was diagnosed in a special duty nursing attendant who worked in the independent living quarters of a long term care facility. In both instances we found lapses in documentation of TB skin testing, use of chest x-ray for screening, and virtually no follow-up for preventive treatment.

The California SNF licensing code allows TB screening of residents by chest x-ray or by TB skin test. Although OSHA and the State recommends TB skin testing for employees, chest x-ray was allowed despite an unvalidated history of a previous positive test. When skin tests were done, SNF staff did not record millimeters of induration but simply recorded the skin test as positive (+) or negative (-). Chest x-ray was used for screening almost half of the time. Because of the wide-

spread practice of screening by chest x-ray, evaluation of skin test conversion is obscured. Their exposure control did not include the offering of preventive treatment for latent infection.

While screening by chest x-ray may give the perception of quality screening, in practice it results in a loss of follow-up for latent infection. Further, as in the two cases cited above, evaluation of suspect disease may be circumvented. Review of old films in our two cases revealed linear and nodular densities in the apices in the location where reactivation later occurred. The chest x-ray readings had described the absence of acute findings, had been reported as having "no acute disease," giving a false sense of assurance. Neither

of the two cases had been evaluated as suspect TB nor had they received treatment for latent infection.

The treatment of latent TB infection in elderly residents of long term care facilities is, in most states, an untouched challenge for many reasons: INH monitoring for toxicity, cross-reaction with other medications, and issues of facility vs. physician oversight. But there are compelling reasons for us to find strategies. The TB case rate of elderly persons living in nursing homes is two to four times greater than the elderly living in the community. TB diagnosis in the elderly is often difficult and missed, many times occurring at autopsy. The elderly living in nursing homes have been reported to have a 3 to 5 percent rate of conversion per year. Isoniazid, when given to converters, significantly reduced the development of active disease from 6% to 0.2%. Screening plus chemoprophylaxis has been shown to be more cost effective when compared to a TB case treatment model.

Statewide, TB case rates in the elderly are the highest among all racial and ethnic groups and genders. CDC guidelines were given in the July 1990 MMWR, "Prevention and Control of Tuberculosis in Facilities Providing Long-Term Care to the Elderly." This is a challenge which can only be met with collaboration. Sitting at the table with Health Facilities could be a start.

Lillian Phang Lee, M.D.

World TB Day 2001

This year's theme for World TB Day is **'DOTS - TB cure for all'**. This theme stresses the urgent need for access to TB treatment and a cure for all TB patients as part of realizing their "right to the highest attainable standard of health." The Los Angeles County TB Control Program encourages TB Times readers to adapt, modify and convey this message to the general public. Although this year's World TB Day falls on a Saturday, March 24, *you can get the word out* during the entire preceding week. If you work within a health care facility, the TB Control Program would like to challenge you to set up an information display or table to educate your patients and co-workers about the ongoing threat of TB and activities in place to control this disease. You can also encourage your employer to disseminate information through payroll inserts or on your company website. To assist you with local World TB Day activities, the TB Control Program has educational pamphlets, fact sheets, and a limited quantity of promotional items that you can order. You can request materials by calling Health Education staff at (213) 744-6229. Some World TB Day activities are already planned. The TB Control Staff will have an information booth outside its offices at 2615 S. Grand Ave., from 8 to 10 a.m., March 19-23. The Liaison Public Health Nurses at Hubert Humphrey Comprehensive Health Center, La Puente Health Center, Alhambra Health Center, and Azusa Health Center will set up display presentations and the Health Educators in Metro (#4), East (#7), and San Gabriel (#3) Service Planning Areas will have public information tables at Central, Whittier, and Monrovia Health Centers respectively.

TB Control welcomes Dr. Meri Rathbun who joined the Tucker Health Center as the chest clinician in late December. She replaces Dr. Yoon, who has transferred to Hollywood-Wilshire Health Center following Dr. Saidy's retirement. Dr. Rathbun most recently performed clinical duties at the Weingart HIV Early Intervention clinic. In June 2000, she completed a three year Infectious Disease fellowship at L.A. County/U.S.C. Medical Center, where she also did her internal medicine residency.

Congratulations to Paulette Frazier, A.P.S. liaison from Central Health Center who was recently promoted to Nurse Manager of the Lead Poisoning Prevention Program. We wish her the best in her new role and extend sincerest appreciation for many years of dedicated and committed service to TB Control.

Rowena Cruz, P.H.N., formerly Charge Team Nurse with the Refugee Team at Hollywood-Wilshire Health Center, has transferred to the

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TB Control Liaison position at Los Angeles County Jail.

Angie Macias, P.H.N. Liaison Nurse at the L.A. County Jail has left TB Control to assume a position at California Children's Services. We will all miss Angie and we wish her the best of luck in her new endeavor.

Dr. Andrea Linscott Leaves Public Health

We were recently informed that Dr. Andrea Linscott will be leaving the Public Health Laboratory to accept a position in Shreveport, Louisiana as Director and Assistant Professor in the Department of Micro-

biology at Louisiana State University. Among her accomplishments, Dr. Linscott served as a member of the Bio-Terrorism Response Team and was responsible for computerizing statistical data and other information which was used extensively by the TB Control Program. During her tenure, she graciously accepted invitations to share her knowledge at our monthly TB conferences. She gave a general update on TB lab issues in November 2000, and reviewed *Mtb* complex and new mycobacterial species in January 2001.

We wish Dr. Linscott the best in her new endeavor and want her to know that she will be sorely missed.

Continued from page 1

the contact investigation should be focused on the contacts who are most at risk. Contacts who are considered to have the most exposure to the patient should receive highest priority and contacts who have the least exposure should be given the lowest priority based on the available information. Some conditions, such as HIV infection, immunosuppressive therapy, and low body weight, increase the risk that TB infection will progress to TB disease...young children less than 4 years of age should also be given high priority for testing, because they can develop serious forms of TB disease very quickly after infection."

Evaluation is *absolutely necessary* to determine how the health department is doing in contact identification, assessment, and treatment. The evaluation step is frequently omitted and should be part of the ongoing process. When the contact investigation is concluded and the **H-289/Contact Investigation Report** and **H-304/TB Screening Report** have

been submitted to TB Control, those involved in the care of the case and management of the contacts should ask some of the following questions:

1. Were an appropriate number of contacts identified?
2. Were the highest-priority contacts located and tested?
3. Was the contact investigation expanded appropriately?
4. Was the contact investigation performed in all setting: house hold or residence, work or school, and leisure or recreational environments?
5. Were contacts completely evaluated (including second skin test if needed) and given appropriate therapy if they had TB infection or disease?
6. Were additional suspects/cases identified?
7. Was the investigation conducted in a timely manner?

In conclusion, as stated in the 1999 CDC report on contact investiga-

tions, "effective and successful contact investigations can help prevent additional cases of TB infection and disease and reduce further transmission of *M. tuberculosis*." It will be up to Public Health staff responsible for CI activities to make this a reality.

Additional information regarding contact investigation can be obtained by reviewing the CDC Self-Study Module on TB on-line at www.cdc.gov/nchstp/tb/pubs/SSmodules.htm. Interim CI guidelines from the California Department of Health/California Tuberculosis Controllers Association are available on the internet at www.ctca.org/guidline/tbinvgl.htm. A copy of Los Angeles County's guidelines can be requested by calling nursing staff at (213)744-6151.

Quotations are taken from the publication "Contact Investigations for Tuberculosis: Self Study Modules on Tuberculosis." U.S. Department of Health and Human Services, Public Health Service. CDC. Atlanta, GA October, 1999.

by Linnie Henry



Health Educator

TB Control is seeking a Health Educator for the Health Education and Training Unit. The Health Educator will assist in the development, implementation, and evaluation of education programs and materials. Candidates must have a Masters Degree in Public Health with concentration in Health Education or Health Promotion. Please submit a cover letter and resume to Robert Miodovski, M.P.H., Senior Health Educator at TB Control, 2615 South Grand

Avenue, Room 507, L.A., CA 90007. For more information, call (213) 744-6229.

Student Professional Worker

TB Control is also seeking a Student Professional Worker (SPW) for the Health Education and Training Unit. The SPW will serve on and assist the Program's Planning Committee for Education. Interested candidates must currently be enrolled in a graduate level public health program. Applicants should submit a cover letter and resume to: David Berger, Program Manager, Tuberculosis Control Program. For more information call (213) 744-6160.

Nursing

The following nursing positions are currently available:

Public Health Nurse:

Charge nurse to work with the Refugee Team at Hollywood Wilshire Health Center.

(3) Assistant Program Specialists:

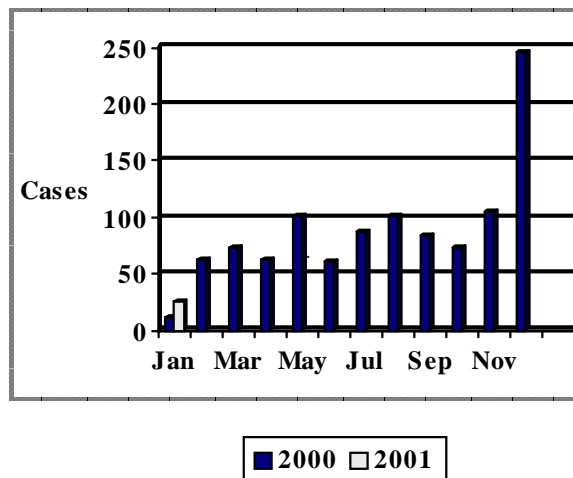
One located in SPA 3 (Monrovia/Pomona Health Center). One located in SPA 7 (Whittier Health Center). One located in SPA 4 (Central Health Center).

Please call Loretta Abkar at (213)744-6160 for more information.

Tuberculosis Cases by Health District
Los Angeles County, January 2001
(Provisional Data)

Service Area	Service Area Total Year to Date	Health District	Jan-01	Jan-00	Year to Date 2001	Year to Date 2000
SPA 1	0	Antelope Valley	0	0	0	0
SPA 2	0	East Valley	0	0	0	0
		West Valley	0	2	0	2
		Glendale	0	0	0	0
		San Fernando	0	0	0	0
SPA 3	8	El Monte	1	1	1	1
		Foothill	1	1	1	1
		Alhambra	3	0	3	0
		Pomona	3	0	3	0
SPA 4	8	Hollywood	6	3	6	3
		Central	2	1	2	1
		Northeast	0	0	0	0
SPA 5	0	West	0	0	0	0
SPA 6	2	Compton	1	1	1	1
		South	0	0	0	0
		Southeast	0	1	0	1
		Southwest	1	1	1	1
SPA 7	7	Bellflower	2	0	2	0
		San Antonio	1	1	1	1
		Whittier	2	0	2	0
		East Los Angeles	2	0	2	0
SPA 8	0	Inglewood	0	0	0	0
		Harbor	0	0	0	0
		Torrance	0	0	0	0
Unassigned	1	Unassigned	1	0	1	0
TOTAL	26		26	12	26	12

Los Angeles County Tuberculosis Incidence By Month of Confirmation, 2000-2001



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TB Times

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In this Issue...

- TB Contact Investigation 1
- Evaluating Contact Investigation 2
- Clinical Corner - LTBI in Residential Facilities. 3
- World TB Day 4